DOCUMENT RESUME

ED 359 895 HE 026 593

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TITLE Expanding the Biomedical Model: Interviews with Medical Educators.
INSTITUTION Pew Charitable Trusts, Philadelphia, PA.
PUB DATE Apr 93
NOTE 18p.; Paper presented at the Annual Meeting of the American Educational Research Association (Atlanta, GA, April, 1993). Funding also received from the Fetzer Institute.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Administrator Attitudes; *Curriculum Design; Educational Philosophy; Higher Education; Interviews; *Medical Education; *Medical Schools; *Models; Nontraditional Education; Teacher Attitudes
IDENTIFIERS *Biomedical Model; *Psychosocial Factors

ABSTRACT

A study was done to broaden the understanding of how medical school programs can integrate the biomedical and psychosocial domains and to gather information for curriculum and program development and evaluation. The study used an exploratory, qualitative research approach and collected data through interviews with 22 expert medical faculty and administrators and through document reviews. The respondents described an integrated model that is broad in scope and that incorporates both a wider scientific theory and a more inclusive approach to medical practice than is offered by the current biomedical model. The integrated model embraces characteristics of a classic biopsychosocial model in its focus on the individual patient and the systems in which the patient is embedded and it also looks beyond to embrace a broader agenda for the community or population level. Findings also suggest that for a medical school to help students learn an integrated approach the curriculum should be patient-centered, integrated, developmental, and population-based. Ideal curricula would reflect all four characteristics throughout the curriculum resulting in programs that are in concert with principles of adult education and with the emerging health care needs of the population. Such curricula could be organized around the problems of practice and would support the creation of reflective practicums. (Contains 28 references.) (JB)

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Expanding the Biomedical Model: Interviews with Medical Educators

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Atlanta, Georgia
April 1993

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HE026593

Support for this work was provided by the Fetzer Institute and the Pew Health Professions Commission at the UCSF Center for the Health Professions. The Pew Commission is a program of The Pew Charitable Trusts. The opinions expressed in this report are those of the authors and do not necessarily reflect the views of the Fetzer Institute, the Pew Health Professions Commission, or The Pew Charitable Trusts.

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Introduction

The biomedical model has formed the foundation and defined the character of American medical practice and education in this century (Ludmerer, 1985). In this model, the focus is on disease as disturbance of organic function, and thus the task of medicine is defined narrowly (Seldin, 1981). There is a growing perception, however, that the biomedical model cannot fully reflect the broad realities of modern health care (White, 1988). Patterns of mortality and morbidity have changed, shifting from a predominance of acute infectious diseases to a predominance of chronic and lifestyle-induced illnesses (U.S. Department of Health, Education, and Welfare, 1979; U.S. Preventive Services Task Force, 1989). These changed patterns demand a different approach to health maintenance and disease treatment that requires health care practitioners to have knowledge and skills that reflect the interdependence of biomedical and psychosocial factors.

Some medical schools have incorporated in their programs opportunities for students and residents to learn about the interaction of psychosocial factors with physiological factors in the maintenance of health and the treatment of illness. Little comprehensive information is available, however, about the nature of programs and courses that address these issues or about the means used to incorporate them successfully in the curriculum. The purposes of this study were (a) to broaden our understanding of how medical school programs can integrate the biomedical and psychosocial domains and (b) to gather information that may be used to suggest frameworks for curriculum and program development and evaluation.

Theoretical Framework

Several models have been proposed to describe an approach to patient care that extends beyond the primary biomedical focus to integrate psychological, social, and behavioral factors in health. Engel's biopsychosocial model (1977), perhaps the most widely known, describes the dynamic interrelations of social, cultural, community, family, interpersonal, behavioral, psychological, and physical systems that promote or inhibit health in an individual. Biobehavioral and social scientists also, study by study, are building a framework for approaching health care in a broader way by investigating the impact of discrete personal behaviors, social and economic conditions, and psychological characteristics on particular aspects of physiological functioning and health (Ader et al., 1991; Hamburg et al., 1982; House et al., 1988). In contrast, Foss and Rothenberg (1987) believe that both the biopsychosocial model and the biobehavioral approach fall short of offering an adequate scientific foundation to serve as an alternative to the biomedical model. Their infomedical model describes a dynamic system with interactive biological, psychological, and contextual levels of organization. Another model, the population perspective, goes beyond looking at the interaction of systems as they affect individuals to focus on analyzing and responding to the needs of populations and the individuals within those populations (White &

Connelly, 1992). The population perspective includes attention to social, cultural, economic, and political factors in addition to physiology and genetics in considering contributions to an individual's health or illness (Showstack et al., 1992). In this model, the physician's role explicitly includes an expanded set of functions on both the clinical and societal levels (Inui, 1992).

Various ways have been suggested to incorporate an integrated approach in medical education. McWhinney (1988) proposes that medicine first develop a transformed clinical method, which then will suggest necessary curricular changes. Others believe that, to form an integrated perspective, student development must occur in three domains, (a) attitudes, (b) knowledge, and (c) behavioral skills (Arnold et al., 1987; McBride, 1990; Odegaard, 1988). Specific programs, in place or proposed, at the medical student and resident levels have been described as well. These include, for example, training blocks in psychosocial medicine within residency programs (Williamson et al., 1992), courses in medical interviewing (Lipkin, 1984), and longitudinal courses for medical students designed to address the doctor-patient relationship (Branch et al., 1991) or to enlarge students' clinical focus to include the psychosocial domain (Cohen-Cole, 1983). In addition, several schools have designed and initiated activities to teach students population-based strategies for improving the health of the public (Showstack et al, 1992).

Research Questions

The aim of this study was to learn more about how an integrated approach to health care can be incorporated in medical school curricula so that further program development and implementation can be facilitated. More specifically, the following questions guided the study:

1. How are the scope and character of an integrated approach defined by experts in the field?
2. What are the various ways in which integrated approaches are being included in medical curricula?
3. How can integrated approaches be fully incorporated in curricula?
4. How can the development of curricula incorporating an integrated approach best be facilitated?

Method

Design. An exploratory, qualitative research approach was used, with data collected through interviews with expert medical faculty and administrators as well as through document review. The complexity, ambiguity, and fluidity of the topic mandates that synthesis of current opinions and visions of leaders and thinkers in the field be the primary focus.

Sources of data. Data were gathered through semi-structured interviews and document review. Purposeful sampling (Patton, 1980) was used to select interviewees with interest and expertise in the field. Some interviewees were suggested at the outset by the literature and through informal consultation, and initial interviewees were asked to identify others. In addition, the

selection process was guided by the desire to assure representation from certain disciplines, mainly primary care. Twenty-four interviewees were identified and sent introductory letters describing the study. Twenty-two agreed to participate, and two could not be contacted to schedule an interview time. Following are the disciplines represented by the respondents and the number of respondents from each discipline (the numbers total more than 22 because two interviewees represent two disciplines each): internal medicine (9), family medicine (7), pediatrics (4), psychiatry (1), and preventive/behavioral medicine (3). The interviewees were current (20) or retired (2) faculty and/or administrators from 17 different medical schools, public and private, in all four regions of the United States (21) and Canada (1). Eighteen of the interviewees are doctors of medicine, two are doctors of philosophy, and two hold both degrees.

A semi-structured interview guide was used to elicit information and ideas in the following areas: views of an integrated perspective in medical practice and education; ways to incorporate an integrated perspective in medical curricula; characteristics of ideal programs reflecting an integrated model; and barriers and facilitators to incorporating such a perspective. The interview guide was reviewed by academic physicians and educational researchers, pilot-tested, and revised prior to its use. Interviews, 30 to 100 minutes in length, were conducted by a single interviewer either by phone (15) or in person (7) during the spring and summer of 1992.

Documents reviewed included books, articles, curriculum guides, evaluation instruments, and conference proceedings that were written, edited, or developed by interviewees, as well as documents cited by interviewees as being significant to them in developing ideas about an integrated perspective or incorporating such a perspective in medical education.

Analysis. A framework for analysis was formed by examining (a) the various alternative models described above and (b) the literature related to teaching an integrated approach to medical students. Within this framework, the constant comparative method described by Strauss and Corbin (1990) was used on a continuous basis during and after data collection. Using this method, interview notes and documents were read multiple times, discrete elements of the data were examined and compared for similarities and differences, and in the process, themes and categories were identified. Category development focused on (a) defining the scope and character of an integrated perspective, (b) delineating various ways to incorporate such a perspective in medical education, and (c) identifying barriers and facilitators to incorporating such a perspective in medical education. Categories originated in and were given names by the literature and the participants. Their development proceeded in an iterative manner, with continual checking and revision throughout the course of the study. Verification or justification of categories was on rational (i.e., logical), referential (i.e., with reference to the literature), and participative grounds. Participative verification refers to giving participants an opportunity to review findings and analyses (Constas, 1992). To this end, a preliminary report of findings was sent to each of the 22

interviewees for critical review. Twelve interviewees responded, seven to affirm their agreement with the analysis and five to suggest ways to clarify, emphasize, or elaborate on certain points. To as great an extent as possible, these suggestions have been incorporated in this report. To further assist in establishing validity, analyses and preliminary results were reviewed by three additional medical and education faculty members.

Results

Scope and character of an integrated approach to health care. Respondents' conceptualizations of an integrated approach to health care encompass many factors and contain many similarities and overlapping ideas. In general, however, these conceptualizations contain two primary threads, the first theoretical and philosophical and the second instrumental: (a) the recognition of the need for a broader scientific model, beyond the biomedical, for understanding health and illness in an individual, and (b) the need for more inclusive approaches to medical practice that actively address the full range of factors that affect health and the management of illness. Inherent in these conceptualizations is the sense that medical research has been defined too narrowly as laboratory research only and that a much broader view of inquiry is needed. Current rules of scientific evidence in medical research must become less restrictive to permit the medical profession to address fully the wide range of contemporary health care problems.

In describing the need for a broader scientific framework for understanding individual health and illness, five respondents reported that they in general subscribe to Engel's "classical" biopsychosocial model as one that illustrates "what constitutes scientific medicine." They mentioned as essential elements of that model the notion that "a perturbation in one system affects all other systems," and that health is created by the interaction of factors on multiple levels. Others, while not specifically mentioning Engel, described the importance of understanding "the intricate and multifaceted web of causality that gives rise to our medical and related problems" and the recognition of the integration of cultural, environmental, emotional, psychological, behavioral, spiritual, and physiological contexts or dimensions of life in influencing one's health and response to illness. Two respondents expressed dissatisfaction with the term "biopsychosocial," feeling that it may have been adequate as an interim term, but that it perpetuates the reductionist view that "you can chop people up into three with the medical history, psychological history, and social history... and perpetuates the idea that medicine is concerned with abstractions."

The second thread running through respondents' conceptualizations focuses on the need for a medical practice that includes attention to non-biomedical concerns and variables along with biomedical factors. For some, this is expressed as a global need to change "the way physicians perceive themselves and relate to patients," and perhaps to begin to view medicine simply as a human helping profession. It involves being able to understand a patient's sufferings, feelings,

and the meaning of the illness to the patient by means of a patient-centered clinical method. For others, this thread is expressed as the need to attend actively to a wide range of patient characteristics (e.g., behavior, psyche) and patient contexts (e.g., social structures, culture, family, physical environment, occupation, economics). Finally, others pointed out the importance of the community or population perspective, which recognizes the presence of larger outside influences on health and which involves taking responsibility on a community level to make changes that ultimately can benefit individuals living in that community. Although more inclusive approaches to practice were described by some as flowing naturally from a broader conception of what constitutes medical science, they also were viewed as valid and important simply on pragmatic grounds. Attending to individual patients' psychological, familial, social, cultural, and environmental contexts allows the tailoring of treatments to individual situations, which can lead to improved patient outcomes, more cost-effective care, and more efficient care delivery. Community approaches--such as working with and providing leadership for state and local health and human services agencies, professionals, and policy-makers--can allow physicians to help improve the health status of larger groups of people.

Implicit in respondents' various conceptualizations of an integrated model are two approaches to widening the scope of medical care, which one respondent termed the "micro" and "macro" approaches, each holding its own set of implications for medical education. The two approaches were described as complementary and of equal importance. The micro approach focuses primarily on the individual patient's physiological, psychological, behavioral, and social characteristics that interact to affect how that person responds to states of health or illness, and consequently focuses primarily on the physician's relationship, communications, and work with the individual patient and, in some cases, with the patient's family. This approach implies that medical education should help medical students develop skills in biopsychosocial medical interviewing and patient care, develop a higher level of awareness of their own psychological and social characteristics, and develop a capacity for reflection on their relationships and work with individual patients.

The macro approach focuses on the social, economic, political, and environmental contexts of individuals, groups, and communities and the ways in which these contexts affect health and illness. As one person said:

> But there's another level that they're coming to engage about their role and responsibility and that is, in a given community as a clinician, what's their responsibility for making sure there are services in the community, that the services are responsive to the needs of families...

The role of medical education within this approach is to help students understand the impact of contextual factors on health and illness and to help them learn how to effect change in the social,

economic, political, and environmental milieux that will improve the health of the individual, group, or community. In medical education, the macro approach has sometimes been defined narrowly as "a synonym for 'we need to teach them epidemiology.'" Although classroom instruction in principles of epidemiology is important, students also need to know "how to connect epi with actual practice." This would involve acquiring the skills to assess the health care needs of the patients in their practice and community populations and translate those needs into concrete work through and with community resources to improve the overall health of individual patients and of the community. For the practicing physician, the population perspective is less traditional public health and more local health policy and community action.

> I think it starts in physicians' offices in how they put together a service that's really responsive on an individual basis, but then it begins to go up. How is that practice going to relate to other agencies in the community? What sort of meaningful interaction is going to go on?...How are they going to cooperate and act as a team with some common goals?...Where are they going to get the resources?...How do you do strategic planning?

Finally, respondents' descriptions of an integrated approach were compared with the collective characteristics of the various alternative models described previously, i.e., the biopsychosocial, biobehavioral, infomedicine, and population perspective models (Ader et al., 1991; Engel, 1977; Foss & Rothenberg, 1987; Hamburg et al., 1982; House et al., 1988; Showstack et al., 1992; White & Connelly, 1992). An aggregation of the various models suggests that an integrated approach to health care might encompass the following three areas: (a) interactive influences on health and illness, (b) strategies for maximizing health in light of these interactive influences, and (c) outcomes of attending to and responding to these interactive influences. In describing the scope and character of an integrated approach, respondents described elements related to each of these three areas, as summarized in Table 1. Mentioned as influences on health and illness in an individual were factors falling into the following five broad areas: social-contextual, physiological, psychological, behavioral, and spiritual. Given these multiple influences, multiple strategies in addition to biomedicine were described as appropriate and necessary, including those for use with individual patients (i.e., micro approaches) as well as those related to working with other practitioners and with community resources and policy-makers (i.e., macro approaches). With regard to curriculum design in medical education, the three areas suggest necessary knowledge and attitudes (Influences on Health), new skills (Health Care Strategies), and clear rationales for helping students develop such knowledge, attitudes, and skills (Outcomes).

Current methods of including an integrated approach in curricula. Respondents described many existing programs at their own and other institutions designed to teach students an integrated approach to health care. They described these programs, however, as beginning, incomplete efforts. The predoctoral programs described included the following: courses in the behavioral

sciences and humanities; problem-based courses with objectives in the psychosocial domain; longitudinal courses on the doctor-patient relationship and communication; training in medical interviewing; clinical methods courses; extended clinical rotations in rural areas; community-based clerkships; visits to patients' homes and workplaces; community service projects with health and human services agencies; and support or mentoring groups for students. Residency-level programs mentioned included Balint groups that explore patient-physician relationships; support groups; seminars dealing with psychosocial, personal, and ethical issues in practice; training in comprehensive medical interviewing; workshops and clinical experience in behavioral medicine; clinical experience with the chronically ill; clinical experience in conjunction with family and human sexuality therapists; teamwork with other health professionals; and clinical rotations in outpatient and community settings. Most of the programs described involved small group, experiential, and individualized methods of instruction.

Ways to fully incorporate an integrated perspective in curricula. Ideal curricula envisioned by the respondents are (a) patient-centered, (b) integrated, (c) developmental, and (d) population-based. In addition, in light of these curricular characteristics, certain teaching, learning, and evaluation methods are preferred. The *patient-centered* nature of such curricula is reflected first in case-based learning and early clinical experience: "medical students should be seeing patients from day one." In addition, respondents also frequently mentioned the need for students to learn patient-centered interpersonal relationship skills and effective interviewing methods, through which students can gather the information necessary to help them choose those management and treatment strategies that are most appropriate in light of an individual patient's characteristics, situation, and needs. This also presupposes that students learn how to scientifically examine and evaluate various treatment options. Skills in managing and sifting information were seen by two respondents as playing a critical role in patient-centered curricula and practice. Computer-based medical informatics systems, for example, can help students and practitioners efficiently locate information from the medical literature or from individual or collective patient records, allowing greater attention to psychosocial issues and the choice of appropriate treatments for individuals in the context of the practice population: "informatics and humanism go hand in hand. They free up doctors to deal with psychosocial issues and doctors can serve as the interface between the biotechnical world and the world of the patient."

In ideal curricula, *integration* occurs in several areas and in several ways. First, integration involves an intertwining of the clinical and basic sciences, including the behavioral and social sciences, through early case-based work and work with patients. Such an intertwining continues throughout the four years. Second, curricular integration involves weaving content regarding mind-body integration into the program by including topics such as psychosomatic medicine, pain mechanisms, the placebo and Hawthorne effects, the influence of social support and hope on

health, and current findings from the field of psychoneuroimmunology and from the biobehavioral sciences. Third, integrated teaching of clinical fundamentals by generalist physicians was deemed necessary to replace the fragmented teaching by a series of specialists that is common today. Generalist physicians were thought to be important overall as role models in helping students learn how to integrate the psychosocial and biomedical aspects of care. Finally, integration involves "an environment of teamwork" with other health and human service professionals from whom students can learn many important skills and attitudes. This is more feasible outside tertiary care settings, which are often more rigidly hierarchical. Most respondents thought that integration of psychosocial aspects of health care must occur throughout the medical school program. As one said:

> The really important issues that provide a thread throughout medical education--the best way to teach those things is to make sure that there are little pieces of it coming from all providers, whether they are basic scientists or surgeons or internists or family practitioners or neuro-ophthalmologists or whatever.

Another, however, thought that some compartmentalization of biopsychosocial concepts is beneficial:

> In order to integrate in practice, you don't need to integrate in education. Rather you need to break down and examine each part. What we lack is <u>some</u> integration to help people achieve understanding.

Developmental aspects of the envisioned curricula are evident in (a) a well-thought-out progression of skill development, (b) activities to promote students' growth and identity as reflective practitioners, (c) attention to students' physical and emotional well-being, and (d) learning activities that instill habits of lifelong, self-directed, and cooperative learning. In such curricula, the structure and sequence of courses and clinical work are determined by students' developmental levels and learning needs rather than by departmental objectives and schedules. Such learner-centeredness begins where the students are, not where the teachers are. The environment of learning is open and accepting and gives students opportunities to discuss their developing "sense of responsible engagement" with patients and time and structure to reflect on various aspects of practice. Physical and emotional well-being are enhanced through support services and continual attention to creating a constructive, helping, non-abusive environment. Competition and rote knowledge are de-emphasized and the focus instead is on helping students learn to set appropriate learning goals for themselves and carry out independent learning projects as well as to engage in interdependent or cooperative learning. In short, the organization demonstrates the values it hopes to instill in students.

The curricula envisioned by the respondents are *population-based* in their close ties to the community, its culture, health care needs, facilities, and resources--to the context of patients' lives. One respondent viewed the environment of learning as "the informal curriculum," which contains

many subliminal messages about values and knowledge. He noted that "to change the way medicine is practiced requires a major change in the learning environment [and a] much greater awareness of the patient's context" and that medical schools should be viewed not as "a set of buildings, but an organization that pervades the whole health care system." A population-based curriculum will help students learn principles of epidemiology as they are applied to a particular practice in a particular community. In addition, it will provide opportunities for students to learn how to interact with community agencies for the benefit of individuals and groups and "how to operate within communities to make system change."

Respondents felt that achieving a medical education that is patient-centered, integrated, developmental, and population-based will require medical educators to make thoughtful choices with regard to instructional strategies. One respondent, for example, stated that "patient-centeredness should be reflected in the teaching-learning situation. Learner-centeredness is the model in the education process for patient-centeredness." Mentioned frequently by respondents was the value of the small group learning format, especially in its capacity to promote a patient-centered philosophy and technique, to allow integration of clinical and basic sciences, to encourage active, self-directed, and cooperative learning, and to permit reflection. Experiential learning in a wide variety of settings with strong role models who demonstrate and teach an integrated approach to health care and who encourage reflective practice also was thought to be crucial. In general, however, respondents advocated the necessity of carefully choosing a variety of formats, from lecture to experiential learning to mentoring, based on students' learning needs. With regard to instructional media, medical informatics systems, videotapes, and standardized patients were mentioned as useful and appropriate.

Thoughtful and creative choices in student evaluation methods also were deemed important. Respondents suggested the necessity of using a wide range of assessment methods to address various learning objectives. In the preclinical years, for example, students could write papers, based on interviews with an individual patient and library research, that describe the biopsychosocial aspects of that patient's illness. Having solid clinically-based and performance-based evaluation to assess clinical competence was seen as especially important. Although acknowledging the importance of board examinations, some suggested that students also should help generate their own learning goals and learn how to evaluate their own progress. Grading, it was felt, often inhibits this process, and one suggested moving to a pass/fail format. Noting that the typical intensive, competitive evaluation system can inhibit student development, respondents advocated stressing progressive shaping and development over time of knowledge, skills, and attitudes. Overall, the evaluation system should encourage students to address broadly all the factors that are important to good patient care, to become reflective, and to develop personally.

Barriers and facilitators to incorporating an integrated approach. Respondents identified many *barriers* to incorporating an integrated approach to health care in medical education. Most frequently mentioned, by 15 respondents, was the attitude of faculty and administrators toward such an approach. Many faculty and administrators, they felt, hold "deeply rooted biases and cultural beliefs," including the belief that attention to psychosocial concerns is inappropriate for physicians. Related to this is the association of an integrated approach with the generalist fields of medicine, which often are considered lower in status than the subspecialty disciplines. Medical education was seen by some, in its overemphasis on tertiary, acute-care medicine, to be unfriendly to primary care. Also, a system of education that can be abusive and non-respectful of students contradicts the person-centered philosophy underlying an integrated approach to care and restricts students' capacity to adopt such an approach. Compounding these problems is a dearth of interested, involved faculty members who model an integrated approach to medical care.

Eight respondents cited difficulties in funding and administering programs that integrate psychosocial issues as a major barrier. Such programs can be expensive and resource-intensive, time-consuming to organize and implement, and vulnerable to elimination in tight budgetary times. In addition, there is a lack of specific knowledge of how to go about actually designing and implementing curricula that incorporate an integrated perspective. The rather diffuse organization of medical schools also is not conducive to incorporating such programs. Two respondents viewed departmental autonomy and power, especially the basic sciences' "undue weight" and control over the preclinical curriculum despite not being held accountable for student outcome, as an important obstacle: "if they don't want to change, they won't." On the level of institutional mission, also mentioned as barriers were a lack of institutional commitment to an integrated approach to medical care and the detachment of medical schools from constituents and the community ("being a cosmic resource is an unwarranted ambition").

Respondents named multiple factors as *facilitators* of the incorporation of an integrated approach in curricula. First, certain factors in the larger environment outside the medical school were cited. Public pressure for reform of the health care system and the financing of medical care is growing, as is recognition of the increasing importance of and commitment to primary care: there is "an extraordinary, growing acceptance...that the high tech approach is at the end of its cost-benefit curve." Growing attention to development of a comprehensive national health policy and movement toward a national health program also were seen as facilitators emanating from the larger environment.

Within this larger context, various characteristics of medical schools and the people within them can facilitate the movement toward incorporating an integrated approach. One respondent described current medical education as "a dead horse that hasn't fallen over yet," and another indicated similarly that the current system of medical education will have to "crumble a bit more

before rebuilding can occur," but that time is an ally. More specific organizational characteristics of medical schools that can serve as facilitators are the following: (a) an independent curriculum committee outside the departments, (b) some measure of departmental autonomy that can allow the development of alternative cultures and ideas, (c) medical schools that are not closed systems, but part of the community, with practicing physicians as faculty members to counter the "splendid isolation" of the schools, and (d) an institutional environment "that espouses respect for the human condition." Curricular characteristics that encourage attention to an integrated approach include the following: (a) early clinical experience for students, (b) giving students opportunities to participate in providing continuity of care for a group of patients, and (c) time built into the curriculum for reflection on practice. In addition, it was felt that those interested in change should be very specific about that change, providing the curricular materials, training, and evaluation instruments needed to implement a new or different program.

Leadership was seen as a key variable in facilitating change. Eight respondents deemed strong, visionary, committed, credible, determined, proactive administrators to be essential, with important roles to play in selecting faculty, articulating values and strategies, and inviting faculty to think in new ways and participate in the change process. Faculty interest and involvement were cited by seven respondents as vital also: "the openness and awareness of faculty are absolutely key." Nine respondents described the importance of "proper" faculty development programs, for both professional and personal growth, as crucial as well. "Proper" programs are those that encourage the sharing of ideas and feelings and the mutual development of new ideas and also that "nurture the faculty." Several also mentioned that reform of the faculty reward system, for example by having separate tracks for teaching and research (both biomedical and behavioral), could encourage greater willingness to teach an integrated approach to care. Such a system, however, should require scholarship of everyone. Finally, with regard to characteristics of medical students, one respondent noted the apparent return of a collective social conscience that is evident in medical student attitudes. As another respondent noted:

> There are students out there who, in their first years of medical school when you'd think they'd just be overwhelmed, are big brothers, are rape crisis counselors, are doing teaching in the schools...There is already an appreciation among the students about the importance of community involvement.

Discussion

The medical faculty who were the respondents in this study are especially interested in and knowledgeable about widening the scope of medical practice and education beyond the biomedical and thus may not represent majority views. The respondents described an integrated model that is broad in scope and that incorporates both a wider scientific theory and a more inclusive approach to

medical practice than is offered by the biomedical model. This integrated model embraces characteristics of Engel's classic biopsychosocial model in its focus on the individual patient and the systems in which the patient is embedded, and it also looks beyond to embrace a broader agenda on the community or population level. As such, this model suggests that it is essential to address development of practitioner knowledge, attitude, and skills with regard to the physician-patient relationship as well as with regard to the physician-community relationship. This parallels Waitzkin's (1991) view that strategies for changing medical discourse ought to consider two time frames: (a) short-range strategies that aim to restructure patient-physician interaction and (b) long-range strategies that attempt to effect social change and improve the context of people's lives.

Although interested faculty have begun to develop some programs, incorporation of an integrated approach throughout an entire curriculum is not known to have occurred. The findings of this study suggest that, to fully enable a medical school to help its students learn an integrated approach to medical care, the school's curriculum should be (a) patient-centered, (b) integrated, (c) developmental, and (d) population-based. Ideal curricula would reflect all four characteristics throughout the curriculum, resulting in programs that are in concert with principles of adult education and with the emerging health care needs of the population. Attention would be paid to the developmental needs of students in their acquisition of professional roles as well as to the professional knowledge and skills essential to practice. Such curricula could be organized around the problems of practice and would support the creation of reflective practicums that provide opportunities for the development in students of reflective practice (Harris, 1991; Schön, 1987). Although there are serious barriers to incorporating an integrated approach, outside pressures are encouraging such change and methods to facilitate such efforts are known, including administrative support and leadership and faculty development programs.

This study provides the foundation for (a) more extensive examinations and evaluations of curricula and (b) the identification of ways to develop comprehensive health professions education programs that reflect an integrated model of health care. Using the ideas identified here regarding the appropriate scope and character of health care and medical education, ideal curricula, and barriers and facilitators to incorporating an integrated approach in medical education, a framework for program analysis currently is being developed. This framework delineates various program characteristics in the areas of curriculum, educational process, faculty, institution, and program outcome that may serve as indicators of a programmatic emphasis on teaching an integrated approach to health care. Use of the framework to investigate individual programs in greater depth may help validate and extend the findings of this study.

With regard to developing comprehensive programs, this study suggests the universe of knowledge and skills that students need to acquire. The next steps are (a) to specify, within this universe, details regarding content and educational process, and (b) to delineate ways to facilitate

program development. Content is suggested by the scope and character of an integrated approach to health care, as delineated by this study, including influences on health and health care strategies. Educational processes must be defined based on thoughtful consideration of learning needs and are delineated to some extent in the framework for program analysis referred to above. Although a great deal of curriculum development work currently is being done in the area of patient-physician communication and relationships, development of other content areas is lagging behind. Especially needed is attention to specifying knowledge, skills, and processes related to the physician-community relationship and the population-based approach. An example would be helping students learn how to assess the needs of their practice population and work with community agencies in a leadership role, perhaps through a longitudinal curriculum in community action for health professionals or a practicum experience.

The evolving health care needs of the public have prompted a reconsideration of the biomedical model in medicine and the integration of psychosocial concerns in patient care. To prepare physicians who will be responsive to the current and future health care needs of the population, medical education must change accordingly. This study begins to craft a framework for the development of medical education programs that can help students learn a contemporary approach to professional practice that explicitly attends to the interaction of biomedical and psychosocial factors in health. As evidenced by the responses of the interviewees who participated in this study, there is no dearth of interest or creativity in identifying ways to help medical students learn such an approach. Needed now is a commitment to develop and evaluate comprehensive model programs that fully embrace and embody an integrated paradigm in health care.

Acknowledgements: The authors wish to thank the interviewees for their participation in this study and their interest in curricular innovation. In addition, James D. Bader, D.D.S., M.P.H., Linda Brooks, Ph.D., Arthur T. Evans, M.D., Linda S. Lee, Ph.D., and Frank T. Stritter, Ph.D., provided valuable assistance with this study.

Table 1 Categorization of Respondents' Ideas of Elements of an Integrated Approach to Care

Influences on Health	Health Care Strategies	Outcomes
• Social-contextual-economic e.g., community, family, work, culture, access to health care, quality of health care, environment, occupation	• Patient-physician relationship e.g., egalitarian partnership	• Effective care
		• Efficient care
	• Practitioner wellness e.g., self-awareness, psychotherapeutic support	• Cost-effective care
		• Increased patient satisfaction
	• Medical interviewing that incorporates full range of biopsychosocial concerns	
• Physiological		
• Psychological		
• Behavioral/Lifestyle	• Adjunctive therapies e.g., family therapy	
• Spiritual		
	• Biomedicine	
	• Teamwork with other health and human service workers	
	• Community work, advocacy	
	• Health policy leadership	

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